1:Gallin E-4,5 (1957-1958) 1966
AD5 Taiwan Hokkien AD5
Formosa AD1



F 361 Taiwanese villages are laid out in three basic patterns. Probably the most common is the nucleated or compact type: the dwellings form a compact cluster which is surrounded by the arable land of the village. The second is linear, laid out along a riverbank or road, and the third, the least common, is the scattered settlement whose houses are spaced out over a larger area, which sometimes makes it difficult to determine the exact boundary of the village. Hsin Hsing, like most of the villages in the area, is a compact cluster of dwellings surrounded by farmlands. One can walk completely around the central cluster in about fifteen minutes.

T 361

T [491] [312] The dwelling cluster is bounded on the southwest by the *hsien* dirt road which connects Lukang with the market town of Chi Hu (all of the villages in this immediate area lie on one or the other or both sides of this road) and on the northeast by an irrigation drainage stream which flows into the sea near Lukang. There are two villages quite close to Hsin Hsing. Lo Ts'e (now incorporated into Yung P'ing village) is along the road about three hundred yards to the northwest, and Ta Yu lies along the same road about eight hundred yards to the southwest. Like all the neighboring settlements, both are separated from Hsin Hsing by fields.

T 311 There are a few fields lying within the dwelling area itself. These are small, mainly garden plots, and are mostly on the outskirts rather than within the village. Hsin Hsing villagers own the fields across the road from the village as well as those between Hsin Hsing and the neighboring villages of Ta Yu and Lo Ts'e, but most of the fields operated by the villagers—either as owners or tenants—are usually not so conveniently located. Many lie to the west on the other side of the road and as much as two or three miles away. Some can be reached only by dirt roads and by narrow paths between the fields. The villagers ride their bicycles as far as they can and walk the rest of the way, often carrying heavy farm implements. A boy might go along leading or riding a water buffalo.

T [491] [487] [493] [231]

T 243 312 Village agriculture is focused primarily on wet-rice cultivation. Hsin Hsing village is located in one of the principal agricultural areas of the island, the long flat west-central coastal plain. With the Strait of Formosa to the west and the interior mountains to the east of the area, there is a natural flow of water from the mountains to the lower lands and finally to the sea. The usually plentiful water supply is harnessed by an intricate network of irrigation systems which consist of rivers, dams, pumping stations—both publicly and privately operated—and artificial waterways and ditches which eventually carry water into the maze of fields.

F 132 The area is subject to great seasonal variation in both temperature and precipitation. Although it lies in the semitropical zone—being

1:Gallin E-4,5 (1957-1958) 1966
AD5 Taiwan Hokkien AD5
Formosa AD1



just north of the Tropic of Cancer—the winters of this coastal area, unlike the interior, are cold and raw while the summers are extremely hot and humid. Winter temperatures seldom fall below the middle forties, but icy winds frequently blow with almost gale force across from the mainland and the Strait of Formosa. Although the area itself never has snow, on a clear January or February day snow-capped peaks of the high interior mountains to the east can be seen from the village.

As in most of Asia, rain is seasonal. Between 80 and 85 percent of the annual rainfall comes during the late spring and summer months (April to September) (Chen, 1950:5).[1] During the heaviest rains and the late summer typhoon season, roads as well as paddy fields are often flooded. In this particular area, frequently the rain alone makes it possible to transplant the rice seedlings, for the irrigation water is often late in reaching the Hsin Hsing area, lying as it does so far from the mountain headwaters. With the passing of the rainy season the weather is relatively dry for the remainder of the year, and all crops depend almost entirely on water from the elaborate irrigation system.

For two decades or more this area has been able to harvest three crops annually. In the irrigated areas two crops of rice are grown; sometimes a vegetable or some other crop is substituted. The third dry crop is usually wheat or sweet potatoes. On dry land, two or possibly three crops a year are grown as well. Such intensive cultivation has been made possible through a favorable climate, irrigation facilities, and an increased availability of chemical fertilizer. It has also come about partially as a result of the population increase, which has provided additional labor to work the available land and to exploit previously undeveloped lands.

Although most of the original inhabitants from the mainland settled on the relatively fertile coastal plain where Hsin Hsing is located, the land resources could not be fully exploited because of their small number. Today, this situation is reversed, and in spite of large-scale irrigation, land scarcity makes it necessary for parts of expanding families, and even whole households, to move to urban centers to find work. Land scarcity in the whole Hsin Hsing area is so severe that even villagers who remain there must go outside the village to earn a livelihood for their families or to supplement the family income. Although the problem may be unusually acute in Hsin Hsing village and in some neighboring villages, it must nevertheless be recognized that it is characteristic of a large part of Taiwan. If the population of the rural areas of the island continues to grow at its present rate, the land scarcity which is now so severe in the Hsin Hsing area will undoubtedly become a major problem for the greater part of the Taiwan countryside.

1:Gallin E-4,5 (1957-1958) 1966
AD5 Taiwan Hokkien AD5



the farmer who owns paddy land to grow rice. If the farmer substitutes vegetables or some other cash crop, he must nevertheless pay his land tax in rice and sell rice to the government at the official price as well. Therefore, in order to have the rice to sell to the government at the official price, the farmer who does not grow rice is forced to buy it on the market at a much higher price than he will get from the government.

## IRRIGATION: ANOTHER EXTERNAL FORCE

The basic economy of the Hsin Hsing area is directly dependent upon the irrigation system. If the land did not receive water through this system, the present sizable agricultural production would not be possible and certainly could not support the large population in the area. The yearly rains usually come in one short season in late May, June, and July, and would be of little value if the water were not stored and channeled to the land at the proper time through elaborate irrigation works. The irrigation water is so important that it frequently causes social conflict between individuals and even between whole villages.

The Hsin Hsing area, and much of Taiwan, is served by two different types of irrigation systems. By far the most important is the public system, which is organized and operated by the Water Conservation Bureau through the Water Conservation Association. Under their administration water is distributed to the major portion of the land in the area. The second system is private and is administered by privately organized cooperative water-pumping associations. The pumping stations of these associations have recently extended the distribution of water to many formerly nonirrigated fields. The cooperatives build their own pumping stations, which draw water from rivers such as the drainage river behind Hsin Hsing, and then use private, and sometimes public, irrigation ditches to transport the water to the fields of its members. (See map 3, showing Pu Yen Hsiang villages and irrigation system.)

### *The Public Irrigation System*

The public irrigation system is organized and operated under the direction of the government. The agency in control, the Water Conservation Bureau, is subordinate to the provincial government's Department of Civil Administration and under the official guidance of the Water Conservation Bureau is the Water Conservation Association, which is made up of a membership of the many farmers who use irrigation water. Theoretically, this association operates and controls the irrigation system, but actually, it is under the authority and direc-

[Text continues on p. 81.]

000 contains 248 households, about 1550 people.[1] Sanlei vil-
361 lage is long and narrow. To the right is a single line of houses following the road with the first and last two separated from the remaining houses which are very close together. On the left, the distance from the road to the creek ranges from 50 to 125 feet. The majority of village buildings are in this area, many fronting on the road, others on one of the five paths from road to creek, and the rest on the courtyard in front of the temple. Three buildings are located across the creek (see Figure 2).

Weather

• 132 Taiwan lies off the east coast of Asia athwart the Tropic of Cancer and is surrounded by warm ocean currents. The northern and summer monsoons influence the weather although all weather is conspicuously modified by Taiwan's rugged topography (Cressey, 1955:238). The north is subtropical and the south, tropical. In the north, winters are cold but rarely does the temperature extend below 40° F. Summers are long and hot, but the temperature reaches 95° F infrequently in the village. Most nights are cool due to the ever present winds. Humidity is nearly always high. Taiwan is in the prime typhoon belt and about three typhoons a year usually pass directly over some part of the island and many others pass nearby. Typhoons dump copious quantities of rain and the winds often cause extensive damages.

132 Village men agree that about once every three years, one crop is seriously reduced by typhoon damage.

Temperature and rainfall in the village are not too unlike those in Taipei although the village and Taipei are separated by the chain of foothills (see Table 1 for official Taipei records). Rain is fairly constant in the northern part of Taiwan. During the last twelve months of our stay, there was rain on 191 different days. Although the yearly mean for rain is 72.4 inches, the year with the least amount totaled only slightly less, 65.3 inches.

Table 1. Taipei Climatic Averages for 56 Years (Taken from Nuttanson, 1963:128)

| Month | Temperature High (Mean) | Inches of Rain | Per Cent Humidity |
|---|---|---|---|
| January | 59.3 | 3.1 | 83 |
| February | 58.9 | 5.2 | 85 |
| March | 62.8 | 7.0 | 84 |
| April | 69.2 | 6.8 | 83 |
| May | 75.9 | 8.7 | 82 |
| June | 79.9 | 11.2 | 82 |
| July | 82.6 | 7.5 | 79 |
| August | 82.4 | 9.3 | 79 |
| September | 79.8 | 6.4 | 80 |
| October | 73.9 | 3.1 | 80 |
| November | 68.5 | 1.9 | 80 |
| December | 62.4 | 2.3 | 82 |
| Year | 71.3 | 72.4 | 82 |

During the heaviest year, one with three typhoons in the northern area, rainfall reached 124.9 inches. Except when typhoons are nearby, rain is usually in the form of a drizzle. The average number of days with precipitation

• 132 is about 184.4 (Nuttanson, 1963:130). In the winter, it rains more frequently, a little nearly every day and we often experienced two or three consecutive weeks without seeing the sun. Although the total quantity of rain is highest during the summer months, much of the summer rain falls during heavier rainstorms.

Historical Setting--Taiwan

101 The prehistory of Taiwan extends several centuries into the past. The base of origin and the cultural backgrounds of the various groups which migrated to Taiwan are matters of some dispute (Farrell, 1964; K. C. Chang, 1956). The remaining descendants of the early settlers now number about 200,000 and still live in the mountains where they are classified as aborigines (Cressey, 1964:174-5). The aborigines are usually classified into seven tribes or three language families. The languages are related to various Southeast Asian languages and aboriginal languages in Okinawa and the Philippines (Farrell, 1964).

175 The existence of Taiwan appears and disappears in the historical record of the Chinese empire. Meaningful settlement did not begin until the 12th century and large numbers emigrated only after the start of the 17th century (Hsieh, 1964:149). During the 15th and 16th century, Taiwan was the home base for Chinese and Japanese pirates who attacked shipping in the South China Sea. The Dutch, Portugese, and Spaniards vied for control of the island

423 owners participated because of a fear the improved land
[651] would be given a higher grade resulting in increased taxes. Although reassessment has still not occurred, non-participants keep saying it soon will.

Irrigation

• 132 Rainfall in northern Taiwan is reasonably adequate
133 every month of the year. There are small mountains running parallel to the village on each side with a small
312 stream down the middle. The mountains produce a considerable water run-off which is channeled to the paddy fields where needed. Only about once every seven or eight years is there a serious shortage of water but there are slight shortages yearly in June and July. There are no water irrigation associations because there is so much surplus water and so many places that it can be tapped, that the small short channels are maintained informally by farmers in the few fields using each source. Only once in fifteen months did we observe a conflict over water levels in spite of these extremely informal arrangements. However, children get in trouble when they play in the fields and break down the barriers and let water fall below requisite levels.

Rice

243 Paddy fields are considered to be the most valuable
311 kind of agricultural land. From the earliest inception of